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II. Remarks/Arguments**A. Discussion of the Amendment**

Claims 1 to 4, 6, 8, and 18 to 37 remain in this application. Claim 1 has been amended by introducing the limitation that the paper is printing paper. There is clear antecedent basis for this amendment at lines 22, 27 and 28 of page 4 of the specification.

Claim 4 and Claim 28 have been amended to limit the amount of polymer material to not more than 5% of the basis weight of the paper. There is clear antecedent basis for this amendment at lines 34 to 37 of page 4 of the specification.

Claim 18 has been amended to include the polymer listed in Claim 19 and Claim 19 has been cancelled. There is clear antecedent basis for this amendment in originally filed Claims 18 and 19.

New Claims 37 and 38 have been added to this application which indicates that the paper or paperboard is calendered. There is clear antecedent basis for this amendment at lines 1 to 14 of page 6 of the specification.

This amendment has clear antecedent basis in the originally filed application and does not introduce new matter. The amendment should be entered accordingly.

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II. Rejection of Claims under 35 USC § 102(b)

Claims 1 to 3, 6, 20 to 27, 29 and 31 to 36 are rejected under 35 USC § 102(b) as being anticipated by USP 4,161,422 (Lawson et al). This rejection is respectfully traversed.

The present invention is directed to a crack resistant printing paper or board. The board or printing paper is comprised of a cellulose fiber web which is impregnated with a polymer material in geometrical formations. The crack resistant properties of the printing paper or board of this invention are clearly shown in the examples.

In evaluation an invention for anticipation the invention must be considered as a whole. Each limitation of the claim is material and essential, and limitations cannot be ignored in assessing anticipation. See In re Stencel, 828 F. 2d 751, 4 USPQ 1071, (Fed. Cir. 1987), and Diversitech Corp. v. Century Steps Inc., 892 F 2d 1562, 7 USPQ 2D 1315 (Fed Cir. 1988). Rejections under 35 U.S.C. §. 102 are technical in nature and require that each cited reference describes the invention as a whole. The burden is on the Patent Office to show anticipation whether by inherency or otherwise. Anticipation requires that every limitation of the claim, arranged as in the claim, is identically shown by a single reference. See Diversitech Corp. v. Century Steps, 850 F. 2d 275, 7 USPQ 2d 1315 (Fed. Co. 1988) and Carrella v. Starlight Arachery and Proline, 904 F. 2d 135, 231 USPQ 644 (Fed. Cir. 1986). The Patent Office has clearly not carried its burden of proof.

Lawson et. al. is directed to filter paper and method of making same. As discussed in Lawson et. al, at Col 2, lines 17 to 24, states that:

"The filler medium of the invention comprises a water-laid web of fibers...the web having a ream weight of 35 to 180 lb., (3000 sq. ft ream); the web impregnated with resin in a pattern at its wire side to a depth from

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15 to 45% of the total thickness of the web, the amount of the resin being from 9 to 15% by weight of the web...the pattern having first zones free of resin and other zones impregnated with the resin".

As described at Col 4, line 30 of Lawson et al the filter medium is useful either as and air filler or a liquid filler,

The claimed invention is clearly not identically or substantially identically described in Lawson et al to support a rejection of claims under 35 USC § 102 for anticipation. Lawson et al is directed to filler paper. Filter paper is very different from the printing paper or board claimed in the rejected claims. It is well known in the art that filter paper is on the one hand and printing paper or board on the other hand are completely different materials having different desirable properties. See the attached exhibits which are copies of pages from "Pulp & Paper Dictionary. No one of ordinary skill in the art world think that what is true for filter paper should also be true of printing paper and board.

The inventions claimed in Claims 4, 8, 28 and 37 have additional differences from the invention described in Lawson et al. For example, Claims 4 and 28 indicate that the amount of polymer material is no more than 5% of the basis weight of the paper or board. On the other hand, the polymer present in the filter paper of Lawson et al is from 9 to 15% by weight of the filter paper which is almost twice as much. Claim 8 requires that printing paper or board is coated with a polymer and Claims 37 and 38 require that the printing paper or board is calendered. None of these features are described in Lawson et al. Based on the foregoing, this rejection is clearly inappropriate and should be withdrawn.

III. Rejection of Claims under 35 USC § 103(a)

Claims 4 and 28 are rejected under 35 USC § 103(a) as being unpatentable over Lawson et al; Claim 18 is rejected under 35 USC § 103(a) as being unpatentable over Lawson et al in view of USP 4,488,932 ("Eber et al");

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and Claims 19 and 30 are rejected under 35 USC § 103(a) unpatentable over Lawson et al in view of USP 6,010,595 ("Mitchell et al"). These rejections are respectfully traversed.

It is applicants' position that this invention is not prima facie obvious in view of the cited references. In order to show prima facie obviousness, there must be evidence (other than speculation by the Examiner) that one of ordinary skill in the art would have been motivated to make the modifications of the prior art necessary to arrive at the claimed subject matter. In re Jones, 958 F. 2d 347, 21 U.S.P.Q. 2d 1941 (Fed. Cir. 1992). No such evidence exists in this case.

All of these rejections primarily rely on Lawson et al as the sole or primary reference. Thus, these rejections will be discussed currently.

As has been noted above Lawson et al relates to filter paper while all of the pending claims are directed to printing paper or board. As shown in the attachments these materials are completely different and require completely different properties to be effective. For example as discussed at Col 1 lines 47 to 62 of Lawson et al properties which are important from a filter paper perspective are:

"(1) contaminated holding capacity...; (2) filtering efficiency...; (3) media migration...; (4) collapse..."

As disclosed at Col 2, lines 6 to 17 of Lawson et al, the invention of that patent are intended to improve these properties of the Lawson et al filter paper. However, these properties required of filter paper have absolutely no benefit in printing paper and board. Why would one of ordinary skill in the art modify the filter paper of Lawson et al where the properties of the filter paper have no advantages for printing paper or board. There can be no reasonable motivation to modify the prior art structure to obtain the claimed printing paper or board

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where as in this case there is no apparent purpose or result to be achieved, no reason or motivation to be satisfied upon modifying the filter paper of Lawson et al to form the printing paper or board of this invention.

The embodiments of this invention claimed in Claims 4, 8, 28, 37 and 38 include other substantial differences from the filter paper of Lawson et al. For example Claims 4, 28 and 38 indicate that the amount of polymer material contained in the claimed printing paper or board is no more than 5% of the basis weight of the printing paper or board. On the other hand, Lawson et al, at Col 2, lines 23 and 24, indicates that the amount of resin in the filter paper of that patent is "from 9 to 15% by weight of the web", or at least about twice as much as in the claimed invention. A teaching of 9 to 15% by weight of the web clearly does not teach, suggest or motivate the use of no more than 5% of the basis weight.

Claim 8 requires that the printing paper or board have a polymer material coated on a surface. Lawson et al clearly does not teach, suggest or motivate the use of such a coating. In fact, such a coating would reduce the porosity of the paper or board which would adversely impact its effectiveness as a filter paper. Why would one of ordinary skill in the art be motivated to modify the prior art invention in a way that would make it ineffective for its intended use?

Claims 37 and 38 require that the printing paper or board be calendered. Here again, Lawson et al does not teach, suggest or motivate the calendering of the filter paper of that reference. Here again, calendaring compacts the printing paper or board which reduces its porosity which makes the printing paper or board less effective as a filter paper.

This rejection is clearly predicated on an obvious-to-try and hindsight reliance of teaching of applicants' application. Hindsight and obvious-to-try are not the standard of review. The courts have clearly held that the appropriate standard is obvious to do based on reasonable motivation from the references

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and not obvious to try. In re Antonie, 559 F2d 618, 195 USPQ 6 (C.C.P.A. 1977) and In re Tomlinson et al., 363 F2d 928, 150 USPQ 623 (C.C.P.A. 1966).

IV. Summary

For the foregoing reasons, Applicants respectfully submit that these rejections are clearly appropriate and respectfully request that they be withdrawn. In view of the foregoing, Applicants respectfully request reconsideration and an allowance of all pending claims.

Respectfully Submitted,
WADOOD HAMAD , ET. AL.

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**PULP&PAPER
Dictionary**

BY John R. Lavigne

TECHNICAL EDITING BY Ken L. Patrick

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and PULP & PAPER INTERNATIONAL 

FINISH

FILTER AIDS: A material, such as diatomaceous silica, that is added to dilute pulp suspension that is to be filtered in order to prevent immediate blocking of the filtering mediums by the fines and colloidal constituents as typically done to white water in a paper mill.

FILTER PAPER: A chemically pure, good-strength, unsized paper. It has high porosity and is made from chemical and/or cotton fiber pulps. It is used for separating suspended solid materials in liquids and gases in laboratory analysis procedures, and domestic and industrial purposes.

FILTERING: The removal of suspended particles in liquids and gases by passing them through a porous material such as paper, cloth, sand, diatomaceous earth, etc.

FILTRATE: Pulp washer and filter effluents.

FILTRATION RATE: The rate at which liquid is fed through a filter, expressed in gallons per minute per square foot of filter media surface.

FINE PAPERS: High-quality writing, printing, and cover-type papers having excellent pen and ink writing surface characteristics.

FINE SCREENS: Types of screening equipment used throughout the papermaking process having a fine mesh sieve and used to remove fiber knots, shives, and particles (debris) from low consistency, diluted stock slurries. The particles removed are very much smaller than those removed by regular coarse screens.

FINENESS: The particle size and distribution of materials such as clay which impacts on their suitability for making up paper-coating pigments.

FINES: Small particles of fiber that are shorter than normal wood pulp fibers. Sometimes called *wood flour*.

FINGER BARS: The mounting structure for the steel plate with protrusions (fingers) used on pocket-type pulpwood grinders. They are used to catch and hold shives and slivers in the pocket and allow pulp and water to flow through.

FINGER TACK: See AUTO ADHESION.

FINGERS: The protrusions on a horizontal steel plate located in the pocket of a pocket-type pulpwood grinder. They are situated on the down-running side and close to the stone so that the fingers will catch shives and large slivers, and allow the pulp and water to flow between them.

FINISH: (1) Surface characteristics of a sheet of paper, such as smoothness, appearance, and gloss, as determined visually. (2) Sometimes used to indicate the density of a sheet of paperboard. See APPARENT DENSITY, DENSITY, and YIELD.

PAPER SIZE

reduce the sheets to smaller pieces, making them more suitable for further processing.

PAPER SIZE: (1) Dimensions of paper which have been established by the paper industry according to their type. Also called *sheet size*. (2) Substances, such as rosin, gelatin, starch, glue, wax, etc., added to paper stock slurries or coated on the sheet to make it resistant to penetration by water and ink. Often known simply as *size*.

PAPER STOCK: A water slurry of various pulp fibers, dyes, additives, and chemicals that will be pumped to the paper machine for forming into a sheet.

PAPER TESTS: Various paper mill physical test procedures conducted on samples of paper taken from rolls to determine whether the paper meets the specifications established for that particular lot or order.

PAPER TEXTILES: Cloth-like fabric sheets made from woven, twisted paper base threads or nonwoven fibers, and formed on a paper machine. See PAPER CLOTH.

PAPER TOWEL: Highly absorbent, thick paper which has been cut into plain or appropriately printed sheets or rolls for use in industrial and household drying and cleaning purposes. The base material for the converted product is called *towelling paper*.

PAPER TRUCK: Truck used to raise and carry paper on skids, in cases, or roll form from one place to another in a paper mill. They are usually hand- or motor-driven.

PAPER TWINE: Rope of various sizes made from threads or twisted, narrow strips of treated paper.

PAPER WASTE: (1) Printed or other used or excess paper commonly utilized by paperboard mills as a source of fibers in the manufacture of various types of paperboards, such as chipboards, and fillers for containerboards. (2) The total unusable weight in the use of a roll of paper plus that damaged during shipment, storage, and handling in the preparation for use.

PAPER WEB: The basic structure of a sheet of paper consisting of a random network of intertwining fibers.

PAPERBOARD: A thick, heavy-weight, rigid, single, or multi-ply type of paper which was traditionally made on multi-cylinder paper machines, but is now also made on fourdrinier-type machines, with and without dual formers. Thickness and material vary, depending on its end use. It is used for wrappings, packaging, boxes, cartons, containers, advertising, merchandising displays, building construction, etc. Also known simply as *board*.

PAPERMAKER: A paper : responsible for the operation o

PAPERMAKERS' ALUM:

PAPERMAKERS' FELT:

PAPERMAN'S FINGERS: trained to detect paper qualit by sense of touch.

PAPETERIE: A chemical : specially for conversion to a c treated, decorated, cut, and p

PAPIER-MACHE: A materi gin pulps, various fillers, adl product with linseed oil. It is junction with merchandising

PAPYRUS: A plant used by for matting into sheets which poses. The term *paper* was e

PARAFFIN PAPER: See W

PARAFFIN WAX: A hard, a low melting point and visc fin oils, and used extensively and paperboard. Some types bees, plants, etc.

PARCHMENT: Writing st such as goats and sheep.

PARCHMENT FINISH: A ish produced on firm paper

PARCHMENT PAPER: A and chemically treated to res greasy food items.

PARCHMENT WRITING: well-hydrated cotton and che and texture as goat and shee

PARCHMENTIZING: Th percent solution of sulfuric a so that the fibers are welded

PROFILE

blue colors used in the dye-
er to obtain secondary colors

E.

ocated immediately after the
undles, and coarse fibers in a
both horizontal and pressur-

n headbox on a fourdrinier
y board, with the liner being

ed from the first stage of a
e settling tank. The sludge is
d of in landfills or dried and

suspended matter from mill
e first stage in a multi-stage
l floating or settleable solids
edimentation.

all of a papermaking fiber,
s oriented at different angles

-coated paper, it is a facing
n serves as a bonding agent
paper.

wer or recovery boiler with

l pump with the liquid to be

which printed material can
er, and is a function of the

ng high density coating ma-
r rolls, which distribute an

per can be printed to high
lage.

PRINTED GLOSS: The reflectivity of a printed surface of paper to light, as if seen through glass or in a mirror.

PRINTED GLOSS MOTTLE: The random nonuniformity in the visual density and/or color of a printed area of paper.

PRINTING PAPER: All types of paper that have characteristics suitable for printing purposes.

PRIVATE BRAND: A brand name of paper which has been assigned to a specific grade of paper and is considered to be the property of a particular paper dealer or user.

PROCESS: The operation of pulp and papermaking in which physical or chemical changes in matter occur; or a conversion in energy, such as a change in pressure, temperature, or speed takes place.

PROCESS AUTOMATION: Implementing *process control* in a pulp and paper mill by the use of computers and advanced electronic instrumentation. It minimizes direct operator involvement with the process itself, while maximizing data availability for more informal decision making. Process automation exists on at least three levels—loop level, supervisory level, and management level (or millwide level). Although the goal is to automate control of the process from every level, operator interface is theoretically broadened, rather than diminished, by having information available to exercise more options as needed.

PROCESS COATED PAPER: Paper whose surface coating was applied while it was being made on the paper machine as an integral part of the papermaking operation.

PROCESS CONTROL: The regulation or manipulation of variables influencing the conduct of any pulp or papermaking operation in such a way as to obtain the maximum amount of product within prescribed quality specifications.

PROCESS LAG: See DEAD TIME.

PROCESS WATER: Any water in a pulp and paper mill that is used to dilute, wash, or carry raw materials, pulp, and any other materials used in the process of making pulp and paper.

PRODUCTION: The actual amount of paper made on a paper machine or in a paper mill, usually expressed in tons per day.

PRODUCTION COST: The fixed costs plus the raw material and labor costs to manufacture paper, usually expressed in dollars per ton.

PROFILE: Continuous cross-machine basis weight and caliper records across the paper web.